Response to California Energy Commission Staff Data Requests 71-73

Traffic and Transportation
Dated January 16, 2003

In Support of the

Application for Certification

For the

Pico Power Project

Santa Clara, California
02-AFC-03

Submitted to the
California Energy Commission

Submitted by
Silicon Valley Power
City of Santa Clara

February 2003

CONTENTS

INTRODUCTION

The following is Silicon Valley Power's response to California Energy Commission (CEC) data requests for the Pico Power Project (PPP) (02-AFC-03). The CEC has served these data requests as part of the discovery process for the PPP project. The CEC provided the data requests on January 16, 2002 in the area of traffic and transportation. The responses in this submittal are given in the order presented by the CEC Staff and are keyed to the CEC Staff Data Request number (1 through 3). For clarity, we have added in parentheses the number that a particular data request would represent in the entire sequence of Staff Data Requests. For example, in sequential number, these three data requests would represent Data Requests 71 through 73. New or revised graphics or tables are numbered in reference to the data request number. (For example, Figure DR72-1 would be the first figure submitted in response to Data Request 72.)

1 (71). Please provide current peak interval and non-peak traffic counts for the intersections of Kenneth Street and Space Park Drive, and Kenneth Street and Duane Avenue.

Response:
Pico project staff conducted traffic counts at these two intersections on January 22, 2003. See Table DR71-1 for the counts (attached at end of section)

2 (72). Please review the City of Santa Clara Statewide Integrated Traffic Reporting System document to determine congested streets in the project vicinity and their accident histories. Provide a copy of the report as well as a summary of the findings.

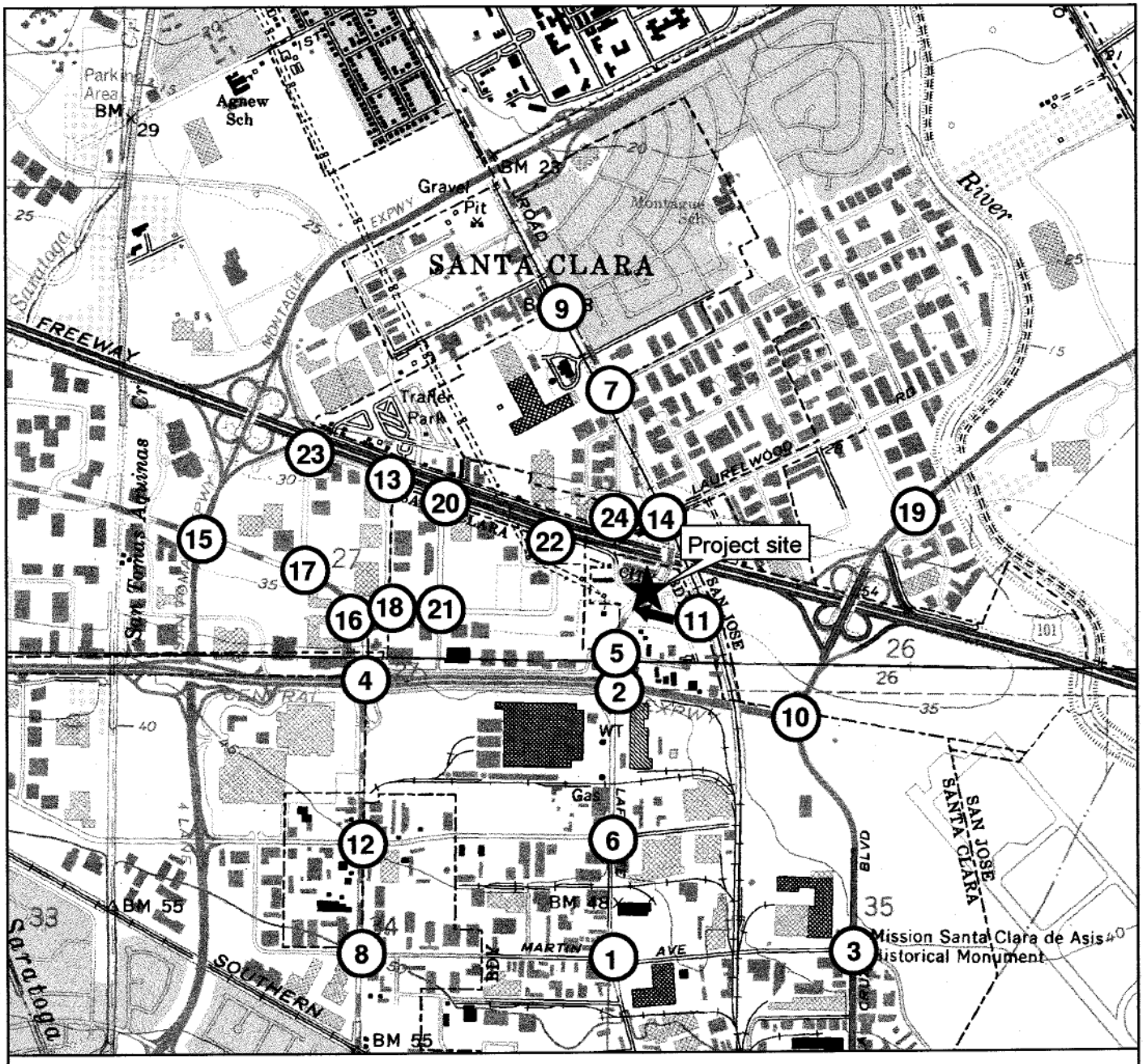
The accident history at most major intersections within the City of Santa Clara was obtained from the California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS) Report Number 8, Collision Location Details, 2001 (January 1 through December 31, 2001). This report provides the following information:

- Type of accident
- Number of vehicles
- Conditions which contributed to the accident
- Age and sex of drivers
- Date and time of day of accident

To evaluate the relative risk of traffic accidents at intersections near the project site, the following factors were evaluated:

- What was the major contributing factor of the accident, such as speed, driver error, weather conditions, traffic control device, geometry of intersection, etc.?
- What was the relative opportunity of accident based on traffic volumes in accidents per million vehicles entering the intersection?
- How does the intersection compare to other similar intersections in the area and on a statewide basis?

Figure DR72-1 displays the intersections reviewed and indicates the number of accidents at each intersection reported for 2001, which is the most recent report available. Table DR72-1 lists the number of traffic accidents, numbers of vehicles involved in such accidents at five key intersections near the project site along expected routes leading from Highway 101 to the project site. The table shows the number of vehicles entering the intersection per year, based on counts done by Foster Wheeler Environmental Corporation for the Pico Project AFC or by the City of Santa Clara. Table DR72-2 lists the numbers of accidents and vehicles involved for all other key intersections within 2 miles of the project site; however, traffic volumes are not available for



Intersection Accidents Reported in 2001

1. Martin Ave. & Lafayette St. =18 accidents
2. Lafayette St. & Central Expressway =17 accidents
3. De La Cruz Blvd. & Martin Ave. =11 accidents
4. Scott Blvd. & Central Expressway =9 accidents
5. Comstock Ave. & Lafayette St. =7 accidents
6. Walsh Ave. & Lafayette St. = 7 accidents
7. Aldo Ave. & Lafayette = 7 accidents
8. Scott Blvd. & Martin Ave. = 5 accidents
9. Lafayette St. & Laurie Ave. = 4 accidents
10. De La Cruz Blvd. & Central Expressway =3 accidents
11. Duane Ave. & Lafayette St. = 2 accidents
12. Scott Blvd. & Walsh Ave. = 2 accidents
13. Alfred St. & Duane Ave. = 2 accidents
14. Laurelwood Rd. & Lafayette St. = 2 accidents
15. Scott Blvd. & San Thomas Expressway =1 accident
16. Scott Blvd. & Space Park Dr. =1 accident
17. Scott Blvd. & Jay St. = 1 accident
18. Alfred St. & Space Park Dr. = 1 accident
19. De La Cruz Blvd. & Trimble Rd. = 1 accident
20. Duane Ave. & Kenneth St. = 0 accidents
21. Kenneth St. & Space Park Dr. = 0 accidents
22. Duane Ave. & Space Park Dr. = 0 accidents
23. Jay St. & Duane Ave. = 0 accidents
24. Laurelwood Rd. & Bassett St. =0 accidents

0 0.25 0.5 0.75 1 Miles

Scale = 1:20,000

N

Reference: Statewide Integrated Traffic Reporting System, Report 8 Collision Location Details. California Highway Patrol, Sacramento, CA. 2001.

Figure DR72-1

Key Intersections
Silicon Valley Power
Pico Power Project

FOSTER WHEELER ENVIRONMENTAL CORPORATION

these intersections. The accident rates in Table DR72-1 are based on estimates of Average Daily Traffic (ADT) through these intersections. Because the most recent ADT figures available were from 1992, Foster Wheeler Environmental Corporation counted traffic at key intersections in May of 2002, to prepare the traffic analysis for the AFC. The ADT for these intersections was then estimated based on the assumption that peak hour traffic would be 10 percent of ADT. The number of vehicles per year is based on this estimate at each key intersection.

Table DR72-1. Intersection accidents reported in 2001 at key intersections

Street Intersection	Total peak in/out vehicle trips at intersection[2]	Number of accidents[3]	Vehicles involved	No. of vehicles entering intersection (mill/year)	Number of accidents per million
1997 Statewide average, signalized suburban intersections[1]	-	-	-	-	0.54
Lafayette and Duane	3,586	2	3	13.09	0.15
Lafayette and Central Expressway	4,606	16	33	14.68	1.09
De La Cruz and Central Expressway	5,146	3	7	18.78	0.16
Scott Blvd and Central Expressway	4,392	9	20	16.03	0.56
Scott and San Tomas	7,807	1	2	28.50	0.03

[1]Caltrans 1997, *Accident Data on California Highways.*
[2]Silicon Valley Power/City of Santa Clara, *Application for Certification, Pico Power Project*, Table 8.12-6, page 8.12-18.
[3]California Highway Patrol, Statewide Integrated Traffic Reporting System, City of Santa Clara, (Report 8 for 01-01-01 through 12-31-01)

Table DR72-2. Intersection accidents in 2001 within two miles.

Street Intersection	Number of accidents	Vehicles involved
Duane and Kenneth	0	0
Kenneth Street and Space Park Drive	0	0
Scott Blvd and Space Park Drive	1	2
Duane and Space Park Drive	0	0
Comstock and Lafayette	7	14
Walsh and Lafayette	7	13
Scott and Walsh	2	5
Scott and Martin	5	10
Martin and Lafayette	18	39
De La Cruz and Martin	11	20
Scott Boulevard and Jay Street	1	2
Jay Street and Duane	0	0
Laurelwood Road and Bassett	0	0
Alfred and Duane	2	4
Alfred and Space Park Drive	1	2
Aldo and Lafayette	7	15
Lafayette and Laurie	4	8
Laurelwood and Lafayette	2	4
De La Cruz and Trimble	1	2

Source: Statewide Integrated Traffic Reporting System, City of Santa Clara, 1/28/03.

The single most important intersection for Pico project construction and operation is the intersection at Lafayette Street and Duane Avenue. This is the intersection to a major thoroughfare nearest the project site. Construction and commuter traffic heading for the project site southbound on Lafayette would make a right turn at this intersection onto Duane Avenue to access the project. Traffic on Highway 101 taking the San Tomas Expressway exit would access Lafayette via Central Expressway and head north to this intersection. Traffic on Highway 101 taking the De La Cruz exit, would also access Lafayette Street via Central expressway and head north to this intersection as would traffic travelling north from central Santa Clara to the project site.

According to the 1997 Accident Data on California State Highways (Caltrans 1997), signalized intersections located in suburban areas averaged 0.54 accidents per million vehicles entering the intersection. The Duane/Lafayette intersection averaged 0.15 accidents per million vehicles entering the intersection (based on two accidents in 2001), a very low accident rate for suburban intersections. Furthermore, one of the two accidents in 2001 at this intersection bore no clear relationship to the physical characteristics of the intersection. This accident took place in rainy conditions when a driver traveling north attempted an improper turn and overturned his vehicle. No other vehicles were involved. The second accident involved a head-on collision between a party travelling south on Lafayette Street and a northbound party turning left onto Duane Avenue.

The only viable alternative to entering the project site via the Lafayette/Duane intersection would be to enter via Duane Avenue from the west. From Highway 101, this route would involve travelling south on San Tomas Parkway, then southeast (left turn) on Scott Boulevard, then east (left turn) onto Space Park Drive, then north (left turn) onto Kenneth Street, then east (right turn) onto Duane Avenue, which leads directly to the project site. This route would cause project traffic to enter 7 intersections in travelling between Highway 101 and the project site. The total number of traffic accidents for all of these intersections combined was 4 during 2001. This route, however, would involve a number of turns on relatively narrow streets within the industrial park to the west of the project site.

The shortest route which would bring project traffic from Highway 101 to the project site would involve exiting Highway 101 at De La Cruz Boulevard south, then turning west (right turn) on Central Expressway, then north (right turn) on Lafayette Street and west (left turn) on Duane to the project site. This route passes through 4 intersections, as opposed to 7 intersections on the route from US 101 to the San Tomas-Scott-Space Park-Kenneth-Duane route. The number of accidents in year 2001, however, on the De La Cruz-Central-Lafayette-Duane route was 28, compared to only 4 accidents on the alternative route. This is partly due to the high accident rate at the intersection of Lafayette Street and Central Expressway (16).

Another alternative to the De La Cruz-Central-Lafayette route would be to take the San Tomas Expressway north from US 101, then turn east (right) onto Montague Expressway, then south

(left hand turn from the expressway off-ramp) onto Lafayette Avenue, then west (right) onto Duane Avenue. The number of accidents on Montague Expressway is not available in the California Highway Patrol printout obtained for the City of Santa Clara. However, the number of accidents in 2001 at Lafayette and Duane is 2, as mentioned above. There were 7 accidents at Lafayette and Aldo, which lies between Montague Expressway and Duane Avenue.

The California Highway Patrol Statewide Integrated Traffic Records System (SWITRS) Report Number 8, Collision Location Details, 2001 for the City of Santa Clara has been provided to the California Energy Commission Staff under separate cover.

3 (73). Please model the current Levels of Service (LOS) for the streets listed in request number one (Data Request 71), as well as potential increased traffic and changes in LOS related to the construction and operation of the Pico Power Project.

Traffic model HCS2000 was initially run using vehicle counts taken on January 22, 2003. Critical turning movement counts were conducted at the intersections of Duane and Kenneth Avenues, as well as at Kenneth and Space Park Avenues for the AM and PM peak hours. The first set of model runs depicts existing traffic and current level of service (LOS) (Table DR73-1). The second set of model runs uses the existing traffic, and then adds the expected construction traffic for the Pico Power Plant of 206 peak construction workers. The third and final set of model run uses the existing traffic, and then adds the projected traffic for operations of the power plant of 15 peak operations workers. In all of the cases, the LOS does not change, remaining at LOS A. Model run printouts are attached at the end of the section.

Table DR73-1. Construction and operation phase LOS for alternative route intersections.

	Existing[1]		Construction Phase		Operation Phase	
Intersection	Total peak in/out vehicle trips at intersection	LOS[2]	Total peak in/out vehicle trips at intersection	LOS[2]	Total peak in/out vehicle trips at intersection	LOS[2]
Kenneth @ Space Park (AM)	123	A	329	A	138	A
Kenneth @ Space Park (PM)	229	A	435	A	244	A
Kenneth @ Duane (AM)	91	A	297	A	106	A
Kenneth @ Duane (PM)	141	A	347	A	156	A

[1] Source: Traffic counts performed on January 22, 2003.
[2] Current LOS is based on intersection delay rather than critical v/c ratio.

TABLE DR71-1

TRAFFIC COUNTS

Table DR71-1. Traffic counts, Duane at Kenneth and Kenneth at Space Park, January 22, 2003

a. Duane at Kenneth Avenue

Time	Eastbound		Westbound		Northbound		Total
	thru	right	thru	left	left	right	
Morning:							
5:45 - 6 AM	4	0	2	3	0	0	9
6 - 7 AM	22	4	22	30	0	0	78
7 - 8 AM	10	9	48	15	3	6	91
8 - 8:45 AM	6	9	30	12	2	4	63
Afternoon:							
3 - 4 PM	21	19	38	31	13	19	141
4 - 5 PM	26	10	31	33	11	21	132
5 - 6 PM	29	10	35	18	11	30	133

b. Kenneth at Space Park Avenue

Time	Eastbound			Westbound			Northbound			Southbound			Total
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	
Morning:													
5:45 - 6 AM	0	2	0	11	13	2	2	9	8	0	0	1	48
6 - 7 AM	26	32	4	1	10	0	2	3	7	0	5	10	100
7 - 8 AM	36	29	9	1	28	0	3	8	2	0	2	5	123
8 - 8:45 AM	1	15	0	30	25	8	5	1	7	1	2	11	106
Afternoon:													
3 - 4 PM	4	60	2	23	53	18	7	4	5	0	9	44	229
4 - 5 PM	3	29	2	14	16	16	15	2	4	2	7	41	151
5 - 6 PM	9	59	1	10	31	14	20	0	2	2	5	41	194

TRAFFIC MODEL OUTPUT

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SLUSSER
Agency/Co.	FOSTER WHEELER ENVIRONMENTAL
Date Performed	2/4/2003
Analysis Time Period	AM PEAK CURRENT

Site Information

Intersection	DUANE AT KENNETH
Jurisdiction	CITY OF SANTA CLARA
Analysis Year	2003
Project ID	PICO POWER PROJECT

East/West Street: DUANE AVE

North/South Street: KENNETH AVE

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	0	10	9	15	48	0
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	3	0	6	0	0	0
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	TR		LT		LR			
PHF	1.00		1.00		1.00			
Flow Rate	19		63		9			
% Heavy Vehicles	0		0		0			
No. Lanes	1		1		1		0	
Geometry Group	1		1		1			
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		0.2		0.3			
Prop. Right-Turns	0.5		0.0		0.7			
Prop. Heavy Vehicle	0.0		0.0		0.0			
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2		
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6		
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7		
hadj, computed	3.69		3.69		3.69			

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20			
x, initial	0.02		0.06		0.01			
hd, final value	3.69		3.69		3.69			
x, final value	0.02		0.07		0.01			
Move-up time, m	2.0		2.0		2.0			
Service Time	1.7		1.7		1.7		1.7	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	269		313		259			
Delay	6.76		7.28		6.77			
LOS	A		A		A			
Approach: Delay	6.76		7.28		6.77			
LOS	A		A		A			
Intersection Delay	7.12							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SLUSSER
Agency/Co.	FOSTER WHEELER ENVIRONMENTAL
Date Performed	2/4/2003
Analysis Time Period	PM PEAK CURRENT

Site Information

Intersection	DUANE AT KENNETH
Jurisdiction	CITY OF SANTA CLARA
Analysis Year	2003
Project ID	PICO POWER PROJECT

East/West Street: DUANE AVE

North/South Street: KENNETH AVE

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	0	29	10	17	35	0
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	11	0	30	0	0	0
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	TR		LT		LR			
PHF	1.00		1.00		1.00			
Flow Rate	39		52		41			
% Heavy Vehicles	0		0		0			
No. Lanes	1		1		1		0	
Geometry Group	1		1		1			
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		0.3		0.3			
Prop. Right-Turns	0.3		0.0		0.7			
Prop. Heavy Vehicle	0.0		0.0		0.0			
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2		
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6		
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7		
hadj, computed	3.88		3.88		3.88			

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20			
x, initial	0.03		0.05		0.04			
hd, final value	3.88		3.88		3.88			
x, final value	0.04		0.06		0.04			
Move-up time, m	2.0		2.0		2.0			
Service Time	1.9		1.9		1.9		1.9	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	289		302		291			
Delay	7.05		7.34		6.87			
LOS	A		A		A			
Approach: Delay	7.05		7.34		6.87			
LOS	A		A		A			
Intersection Delay	7.11							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SLUSSER
Agency/Co.	FOSTER WHEELER ENVIRONMENTAL
Date Performed	2/4/2003
Analysis Time Period	AM PEAK CONSTRUCTION

Site Information

Intersection	DUANE AT KENNETH
Jurisdiction	CITY OF SANTA CLARA
Analysis Year	2003
Project ID	PICO POWER PROJECT

East/West Street: DUANE AVE

North/South Street: KENNETH AVE

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	0	10	9	15	48	0
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	3	0	212	0	0	0
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	TR		LT		LR			
PHF	1.00		1.00		1.00			
Flow Rate	19		63		215			
% Heavy Vehicles	0		0		0			
No. Lanes	1		1		1		0	
Geometry Group	1		1		1			
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	0.0		0.2		0.0			
Prop. Right-Turns	0.5		0.0		1.0			
Prop. Heavy Vehicle	0.0		0.0		0.0			
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2		
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6		
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7		
hadj, computed	4.09		4.09		4.09			

Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
hd, initial value	3.20		3.20		3.20			
x, initial	0.02		0.06		0.19			
hd, final value	4.09		4.09		4.09			
x, final value	0.02		0.08		0.21			
Move-up time, m	2.0		2.0		2.0			
Service Time	2.1		2.1		2.1		2.1	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	269		313		465			
Delay	7.19		7.74		7.42			
LOS	A		A		A			
Approach: Delay	7.19		7.74		7.42			
LOS	A		A		A			
Intersection Delay	7.47							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SLUSSER
Agency/Co.	FOSTER WHEELER ENVIRONMENTAL
Date Performed	2/4/2003
Analysis Time Period	PM PEAK CONSTRUCTION

Site Information

Intersection	DUANE AT KENNETH
Jurisdiction	CITY OF SANTA CLARA
Analysis Year	2003
Project ID	PICO POWER PROJECT

East/West Street: DUANE AVE

North/South Street: KENNETH AVE

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	0	29	10	223	35	0
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	11	0	30	0	0	0
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	TR		LT		LR			
PHF	1.00		1.00		1.00			
Flow Rate	39		258		41			
% Heavy Vehicles	0		0		0			
No. Lanes	1		1		1		0	
Geometry Group	1		1		1			
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		0.9		0.3			
Prop. Right-Turns	0.3		0.0		0.7			
Prop. Heavy Vehicle	0.0		0.0		0.0			
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2		
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6		
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7		
hadj, computed	4.09		4.09		4.09			

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20			
x, initial	0.03		0.23		0.04			
hd, final value	4.09		4.09		4.09			
x, final value	0.04		0.30		0.05			
Move-up time, m	2.0		2.0		2.0			
Service Time	2.1		2.1		2.1		2.1	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	289		508		291			
Delay	7.28		9.01		7.38			
LOS	A		A		A			
Approach: Delay	7.28		9.01		7.38			
LOS	A		A		A			
Intersection Delay	8.62							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SLUSSER
Agency/Co.	FOSTER WHEELER ENVIRONMENTAL
Date Performed	2/4/2003
Analysis Time Period	AM PEAK OPERATIONS

Site Information

Intersection	DUANE AT KENNETH
Jurisdiction	CITY OF SANTA CLARA
Analysis Year	2003
Project ID	PICO POWER PROJECT

East/West Street: DUANE AVE

North/South Street: KENNETH AVE

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	0	10	9	15	48	0
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	3	0	21	0	0	0
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	TR		LT		LR			
PHF	1.00		1.00		1.00			
Flow Rate	19		63		24			
% Heavy Vehicles	0		0		0			
No. Lanes	1		1		1		0	
Geometry Group	1		1		1			
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		0.2		0.1			
Prop. Right-Turns	0.5		0.0		0.9			
Prop. Heavy Vehicle	0.0		0.0		0.0			
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2		
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6		
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7		
hadj, computed	3.72		3.72		3.72			

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20			
x, initial	0.02		0.06		0.02			
hd, final value	3.72		3.72		3.72			
x, final value	0.02		0.07		0.02			
Move-up time, m	2.0		2.0		2.0			
Service Time	1.7		1.7		1.7		1.7	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	269		313		274			
Delay	6.80		7.31		6.66			
LOS	A		A		A			
Approach: Delay	6.80		7.31		6.66			
LOS	A		A		A			
Intersection Delay	7.07							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SLUSSER
Agency/Co.	FOSTER WHEELER ENVIRONMENTAL
Date Performed	2/4/2003
Analysis Time Period	PM PEAK OPERATIONS

Site Information

Intersection	DUANE AT KENNETH
Jurisdiction	CITY OF SANTA CLARA
Analysis Year	2003
Project ID	PICO POWER PROJECT

East/West Street: DUANE AVE

North/South Street: KENNETH AVE

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	0	29	10	32	35	0
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	11	0	30	0	0	0
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	TR		LT		LR			
PHF	1.00		1.00		1.00			
Flow Rate	39		67		41			
% Heavy Vehicles	0		0		0			
No. Lanes	1		1		1		0	
Geometry Group	1		1		1			
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.0		0.5		0.3			
Prop. Right-Turns	0.3		0.0		0.7			
Prop. Heavy Vehicle	0.0		0.0		0.0			
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2		
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6		
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7		
hadj, computed	3.89		3.89		3.89			

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20			
x, initial	0.03		0.06		0.04			
hd, final value	3.89		3.89		3.89			
x, final value	0.04		0.08		0.04			
Move-up time, m	2.0		2.0		2.0			
Service Time	1.9		1.9		1.9		1.9	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	289		317		291			
Delay	7.07		7.46		6.91			
LOS	A		A		A			
Approach: Delay	7.07		7.46		6.91			
LOS	A		A		A			
Intersection Delay	7.20							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SLUSSER
Agency/Co.	FOSTER WHEELER ENVIRONMENTAL
Date Performed	2/4/2003
Analysis Time Period	AM PEAK CURRENT

Site Information

Intersection	KENNETH AT SPACE PARK
Jurisdiction	CITY OF SANTA CLARA
Analysis Year	2003
Project ID	PICO POWER PROJECT

East/West Street: SPACE PARK AVE

North/South Street: KENNETH AVE

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	36	29	9	1	28	0
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	3	8	2	0	2	4
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate	74		29		13		6	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.5		0.0		0.2		0.0	
Prop. Right-Turns	0.1		0.0		0.2		0.7	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	3.99		3.99		3.99		3.99	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.07		0.03		0.01		0.01	
hd, final value	3.99		3.99		3.99		3.99	
x, final value	0.08		0.03		0.01		0.01	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.0		2.0		2.0		2.0	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	324		279		263		256	
Delay	7.35		7.15		7.14		6.76	
LOS	A		A		A		A	
Approach: Delay	7.35		7.15		7.14		6.76	
LOS	A		A		A		A	
Intersection Delay	7.25							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SLUSSER
Agency/Co.	FOSTER WHEELER ENVIRONMENTAL
Date Performed	2/4/2003
Analysis Time Period	PM PEAK CURRENT

Site Information

Intersection	KENNETH AT SPACE PARK
Jurisdiction	CITY OF SANTA CLARA
Analysis Year	2003
Project ID	PICO POWER PROJECT

East/West Street: SPACE PARK AVE

North/South Street: KENNETH AVE

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	4	60	2	23	53	18
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	7	4	5	0	9	44
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate	66		94		16		53	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.2		0.4		0.0	
Prop. Right-Turns	0.0		0.2		0.3		0.8	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.13		4.13		4.13		4.13	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.06		0.08		0.01		0.05	
hd, final value	4.13		4.13		4.13		4.13	
x, final value	0.08		0.11		0.02		0.06	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.1		2.1		2.1		2.1	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	316		344		266		303	
Delay	7.46		7.52		7.28		6.98	
LOS	A		A		A		A	
Approach: Delay	7.46		7.52		7.28		6.98	
LOS	A		A		A		A	
Intersection Delay	7.36							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SLUSSER
Agency/Co.	FOSTER WHEELER ENVIRONMENTAL
Date Performed	2/4/2003
Analysis Time Period	AM PEAK CONSTRUCTION

Site Information

Intersection	KENNETH AT SPACE PARK
Jurisdiction	CITY OF SANTA CLARA
Analysis Year	2003
Project ID	PICO POWER PROJECT

East/West Street: SPACE PARK AVE

North/South Street: KENNETH AVE

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	36	29	9	1	28	0
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	3	8	2	206	2	4
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate	74		29		13		212	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.5		0.0		0.2		1.0	
Prop. Right-Turns	0.1		0.0		0.2		0.0	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.48		4.48		4.48		4.48	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.07		0.03		0.01		0.19	
hd, final value	4.48		4.48		4.48		4.48	
x, final value	0.09		0.04		0.02		0.26	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.5		2.5		2.5		2.5	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	324		279		263		462	
Delay	7.94		7.69		7.40		8.84	
LOS	A		A		A		A	
Approach: Delay	7.94		7.69		7.40		8.84	
LOS	A		A		A		A	
Intersection Delay	8.47							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SLUSSER
Agency/Co.	FOSTER WHEELER ENVIRONMENTAL
Date Performed	2/4/2003
Analysis Time Period	PM PEAK CONSTRUCTION

Site Information

Intersection	KENNETH AT SPACE PARK
Jurisdiction	CITY OF SANTA CLARA
Analysis Year	2003
Project ID	PICO POWER PROJECT

East/West Street: SPACE PARK AVE

North/South Street: KENNETH AVE

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	4	60	2	23	53	18
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	7	4	5	0	9	250
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate	66		94		16		259	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.2		0.4		0.0	
Prop. Right-Turns	0.0		0.2		0.3		1.0	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.56		4.56		4.56		4.56	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.06		0.08		0.01		0.23	
hd, final value	4.56		4.56		4.56		4.56	
x, final value	0.08		0.12		0.02		0.27	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.6		2.6		2.6		2.6	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	316		344		266		509	
Delay	7.97		8.06		7.52		8.07	
LOS	A		A		A		A	
Approach: Delay	7.97		8.06		7.52		8.07	
LOS	A		A		A		A	
Intersection Delay	8.03							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SLUSSER
Agency/Co.	FOSTER WHEELER ENVIRONMENTAL
Date Performed	2/4/2003
Analysis Time Period	AM PEAK OPERATIONS

Site Information

Intersection	KENNETH AT SPACE PARK
Jurisdiction	CITY OF SANTA CLARA
Analysis Year	2003
Project ID	PICO POWER PROJECT

East/West Street: SPACE PARK AVE

North/South Street: KENNETH AVE

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	51	29	9	1	28	0
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	3	8	2	0	2	4
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate	89		29		13		6	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.6		0.0		0.2		0.0	
Prop. Right-Turns	0.1		0.0		0.2		0.7	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.02		4.02		4.02		4.02	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.08		0.03		0.01		0.01	
hd, final value	4.02		4.02		4.02		4.02	
x, final value	0.10		0.03		0.01		0.01	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.0		2.0		2.0		2.0	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	339		279		263		256	
Delay	7.47		7.17		7.17		6.79	
LOS	A		A		A		A	
Approach: Delay	7.47		7.17		7.17		6.79	
LOS	A		A		A		A	
Intersection Delay	7.34							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	SLUSSER
Agency/Co.	FOSTER WHEELER ENVIRONMENTAL
Date Performed	2/4/2003
Analysis Time Period	PM PEAK OPERATIONS

Site Information

Intersection	KENNETH AT SPACE PARK
Jurisdiction	CITY OF SANTA CLARA
Analysis Year	2003
Project ID	PICO POWER PROJECT

East/West Street: SPACE PARK AVE

North/South Street: KENNETH AVE

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	4	60	2	23	53	18
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	7	4	5	0	9	44
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	1.00		1.00		1.00		1.00	
Flow Rate	66		94		16		53	
% Heavy Vehicles	0		0		0		0	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.2		0.4		0.0	
Prop. Right-Turns	0.0		0.2		0.3		0.8	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.13		4.13		4.13		4.13	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.06		0.08		0.01		0.05	
hd, final value	4.13		4.13		4.13		4.13	
x, final value	0.08		0.11		0.02		0.06	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.1		2.1		2.1		2.1	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	316		344		266		303	
Delay	7.46		7.52		7.28		6.98	
LOS	A		A		A		A	
Approach: Delay	7.46		7.52		7.28		6.98	
LOS	A		A		A		A	
Intersection Delay	7.36							
Intersection LOS	A							